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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,581	02/28/2002	Robert Dalgleish	13914RRUS01U (22171.311)	9025

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EXAMINER	
AMINZAY, SHAIMA Q	

ART UNIT	PAPER NUMBER
2684	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,581	DALGLEISH ET AL.	
	Examiner	Art Unit	
	Shaima Q. Aminzay	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The following office action is in response to Amendment, filed October 28, 2004.

Claims 1-20 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-15, and 20 are rejected under 35 U.S.C.103(a) as being unpatentable over Ito (Ito et al. U. S. Patent 6,690,915) in view of Komara (Komara et al. U. S. Patent 6,339,694), and further in view of Grandfield (Grandfield et al. U. S. Patent 5,802,452).

Regarding claim 1, Ito discloses a method for automatically configuring a first gain and a second gain of a repeater in a telecommunications system (see for example, Figure 1, column 1, lines 10-16, column 10, lines 51-53, and column12, lines 19-32, the automatically gain control system automatically configuring

(controlling) the downlink gain (first gain) and a uplink gain (second gain)) of a repeater (booster performs the same function as a repeater)), and the repeater operable to receive data from a transceiver via a downlink channel associated with the first gain (see for example, Figure 1, column 11, lines 22-41, the booster (repeater) receives data from transceivers (180 and 182) via downlink (associated with the first gain)), and to send data to the transceiver via an uplink channel associated with the second gain (see for example, Figure 1, column 11, lines 22-41, the booster (repeater) transmit data from transceivers (180 and 182) via uplink (associated with the second gain)), the method comprising: adjusting the first gain so that the [sampled] power level is within a predetermined range of the reference power level (see for example, column 3, lines 40-60, column 4, lines 14-25, column 11, lines 22-33, lines 47-52, column 2, lines 48 (expression (4)) through line 50, and lines 58-64, adjusted the downlink gain (first gain) within the known (predetermined) transmission power level of the reference signal (within the range of reference power level)), and adjusting the second gain to equal the first gain (see for example, column 11, lines 47-50, column 14, lines 9-28, adjusting the uplink gain (second gain) to the downlink gain (first gain) else imbalance between the uplink and downlink gains disturbs transmission), so that a balance can be automatically achieved between a coverage area of the repeater and a level of noise associated with the uplink channel (see for example, column 3, lines 48-50, column 12, lines 20-29, column 13, lines 10-12, lines 22-24, balance between the booster (repeater) coverage area and the noise

with the uplink channel is being automatically controlled).

Ito does not specifically disclose sampling a power level [of the downlink channel] and comparing the sampled power level [to a reference power level], however, Ito teaches the downlink channel power level is responsive to the reference signal power level (see for example, column 3, lines 51-56).

In a related art dealing with repeater transmission gain control in a telecommunications system (see for example, column 1, lines 11-15, and column 2, lines 49-53, column 3, lines 53-60), Komara teaches sampling the power level (see for example, Figure 7 (ALC, 704), column 2, lines 49-67, column 10, lines 20-21, and lines 54-55, the repeater uses Automatic Level Control power level sampling technique in downlink and the uplink transmission of the repeater).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Komara's mobile repeater sampling power level with Ito's booster (repeater) noise and gain controller for mobile and base stations (see for example, column 2, lines 18-45) to provide a telecommunication system repeater with self-adjusting power level controller that is safe to be used with the expensive high power repeater unit (Komara, see for example, column 7, lines 27-39, and column 3, lines 54-60).

Komara does not specifically disclose comparing the sampled power level, however, Komara teaches that "the sampling and comparison of the signal strength" (power level) "can be performed by a processor such as microprocessor" (column 2, lines 63-65).

In a related art dealing with repeater transmission in a radio communications system (see for example, column 1, lines 5-12), Grandfield teaches comparing the power level (see for example, column 2, lines 60-67 continued to column 3, lines 1-17, comparing the voltage gain level (power level) to a reference level).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Grandfield's power level comparison with Komara's mobile repeater sampling power level into Ito's booster (repeater) noise and gain controller for mobile and base stations (see for example, column 2, lines 18-45) "to provide multiple high data rate channels that can be controlled without generating interference between each channel, while also optimizing the RF output power" (Grandfield, column 1, lines 38-44).

Regarding claim 11, Ito discloses a method for automatically adjusting a first gain and a second gain in a repeater (see for example, Figure 1, column 1, lines 10-16, column 10, lines 51-53, and column12, lines 19-32, the automatically gain control system automatically adjusting (controlling) and downlink gain (first gain) and a uplink gain (second gain) of a repeater (booster performs the same function as a repeater)), the method comprising: receiving a signal from the transceiver via the downlink channel (see for example, Figure 1, column 11, lines 22-41, the booster (repeater) receives data from transceivers (180 and 182) via downlink channel), [sampling] the received signal to obtain a power level (see for example, column 3, lines 61-64, column 4, lines 14-21, power level and received

signal), and determining whether the [sampled] power level falls within a predefined range of the reference power level (see for example, column 3, lines 40-60, column 4, lines 14-25, column 11, lines 22-33, lines 47-52, column 2, lines 48 (expression (4)) through line 50, and lines 58-64, determining the power gain within the known (predetermined) transmission power level of the reference signal (within the range of reference power level)), and incrementally adjusting the first gain so that the sampled power level is within the predetermined range (see for example, column 3, lines 40-60, column 4, lines 14-25, column 11, lines 22-33, lines 47-52, column 2, lines 48 (expression (4)) through line 50, and lines 58-64, column 12, lines 41-44, adjusted the downlink gain (first gain) within the known (predetermined) transmission power level of the reference signal (within the range of reference power level), using time constant for varying gain (incrementally adjusting gain)), and adjusting the second gain so that the second gain is within a predefined range of the first gain ((see for example, column 11, lines 47-50, column 14, lines 9-28, adjusting the uplink gain (second gain) to the downlink gain (first gain) else imbalance between the uplink and downlink gains disturbs transmission).

Ito does not specifically disclose sampling a power level [of the downlink channel] and comparing the sampled power level [to a reference power level], however, Ito teaches the downlink channel power level is responsive to the reference signal power level (see for example, column 3, lines 51-56).

In a related art dealing with repeater transmission gain control in a

telecommunications system (see for example, column 1, lines 11-15, and column 2, lines 49-53, column 3, lines 53-60), Komara teaches sampling the power level (see for example, Figure 7 (ALC, 704), column 2, lines 49-67, column 10, lines 20-21, and lines 54-55, the repeater uses Automatic Level Control power level sampling technique in downlink and the uplink transmission of the repeater).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Komara's mobile repeater sampling power level with Ito's booster (repeater) noise and gain controller for mobile and base stations (see for example, column 2, lines 18-45) to provide a telecommunication system repeater with self-adjusting power level controller that is safe to be used with the expensive high power repeater unit (Komara, see for example, column 7, lines 27-39, and column 3, lines 54-60).

Komara does not specifically disclose comparing the sampled power level, however, Komara teaches that "the sampling and comparison of the signal strength" (power level) "can be performed by a processor such as microprocessor" (column 2, lines 63-65).

In a related art dealing with repeater transmission in a radio communications system (see for example, column 1, lines 5-12), Grandfield teaches comparing the power level (see for example, column 2, lines 60-67 continued to column 3, lines 1-17, comparing the voltage gain level (power level) to a reference level).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Grandfield's power level comparison with

Komara's mobile repeater sampling power level into Ito's booster (repeater) noise and gain controller for mobile and base stations (see for example, column 2, lines 18-45) "to provide multiple high data rate channels that can be controlled without generating interference between each channel, while also optimizing the RF output power" (Grandfield, column 1, lines 38-44).

Regarding claim 2, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 1, and Ito further teaches selecting the reference power level to control the level of noise associated with the uplink channel (see for example, column 12, lines 10-28).

Regarding claim 3, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 1, and Ito further teaches the perch signal (perch signal is equivalent to "pilot" signal) or any other signal as reference signal (column 12, lines 5-9, and column 11, lines 53-55).

Regarding claim 4, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 3, and Komara further teaches demodulating the signal (see for example, column 8, lines 16-19).

Regarding claim 5, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 1, and Ito further teaches an

initial downlink channel gain with an initial uplink channel gain and altering at least one of the initial gains so that the initial gains fall within a predetermined range relative to one another (see for example, column 6, lines 48-67, column 7, lines 3-10, the power information such as initial uplink and downlink channel gain and the reference (predetermined) gain monitoring), and further the downlink channel and uplink channel use different frequencies (see for example, column 12, lines 11-50, the downlink channel and uplink channel use different frequencies that are used to calculate the noise level (column 12, lines 10-18) and the uplink and downlink signal gain (column 12, lines 32-50)).

Regarding claims 6 and 7, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 5, and Ito further teaches the first gain/frequency (uplink) and the second gain/frequency (downlink) and may different from each other and the controller monitors to keep the gain value within acceptable value to prevent the effect on the transmission power control of the base station and the mobile station (see for example, column 12, lines 32-50).

Regarding claims 8, 10, 14, and 15, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claims 1, 11, and Ito further teaches the minimum and maximum gain with upper and lower values and ensuring that the repeater is capable of supporting the gain (see for

example, column 12, lines 32-40, and column 16, lines 21-24).

Regarding claim 9, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 1, and Ito further teaches plurality of other signals on the downlink channel with the first gain (see for example, Figure 1, more than one base station (180, and 182)).

Regarding claim 12, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 11, and Ito further teaches selecting the reference power level so that a level of noise associated with the uplink channel remains below a predetermined maximum noise level (see for example, column 12, lines 10-28, the noise associated with the uplink channel is being calculated and being controlled within the range to prevent interference).

Regarding claim 13, Ito in view of Komara and further in view of Grandfield teach all the claimed limitation as recited in claim 11, Komara further teaches sampling the received signal, and further Ito teaches balancing the first and second gains [before sampling] the received signal (see for example, column 13, lines 10-20, balancing the downlink (first) gain and uplink (second) gain of the receiving signals).

Regarding claim 20, Ito in view of Grandfield teach all the claimed limitation

as recited in claim 16, however, Ito in view of Grandfield does not teach specifically demodulating the signal.

In a related art dealing with repeater transmission gain control in a telecommunications system (see for example, column 1, lines 11-15, and column 2, lines 49-53, column 3, lines 53-60), Komara teaches demodulating the signal (see for example, column 8, lines 16-19).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Grandfield's demodulating the signal with Komara's mobile repeater sampling power level into Ito's booster (repeater) noise and gain controller for mobile and base stations (see for example, column 2, lines 18-45) to provide a telecommunication system repeater with self-adjusting power level controller that is safe to be used with the expensive high power repeater unit (Komara, see for example, column 7, lines 27-39, and column 3, lines 54-60), "to provide multiple high data rate channels that can be controlled without generating interference between each channel, while also optimizing the RF output power" (Grandfield, column 1, lines 38-44).

2. Claims 16-19 are rejected under 35 U.S.C.103(a) as being unpatentable over Ito (Ito et al. U. S. Patent 6,690,915) in view of Grandfield (Grandfield et al. U. S. Patent 5,802,452).

Regarding claim 16, Ito teaches a self-configuring repeater for use in a

telecommunications network (see for example, Figure 1, column 1, lines 10-16, column 10, lines 51-53, and column12, lines 19-32, the self-configuring (automatically gain control) booster performs the same function as a repeater in a telecommunication network), and the repeater operable to receive data from a base station via a downlink channel and to send data to the base station via an uplink channel (see for example, Figure 1(180, 182, 130, 132, 190), column 11, lines 22-41, column 12, lines 28-32, the booster receives data from transceivers (180 and 182) and sends data to transceivers (180 and 182) via uplink from a mobile station (190)), and a first amplifier chain operable to apply a first gain to a first signal received via the downlink channel (see for example, Figure 1 (180, 182, 130, 132, 190), column 11, lines 27-33, column 12, lines 28-32, the first amplifier (144) and gain control setting transferred (Figure 1 (112, 114, 108)), and second amplifier chain operable to apply a second gain to a second signal to be sent via the uplink channel (see for example, Figure 1(180, 182, 130, 132, and 190), column 11, lines 34-41, column 12, lines 28-32, the second amplifier (116) and gain control setting transferred (Figure 1(112, 116, 110)), and adjust the first gain so that the power level of the first signal falls within a predetermined range of the reference power level (see for example, column 3, lines 40-44, and column 11, lines 22-33, the downlink gain (first gain) is adjusted using the reference signal (predetermined signal from the base station)), and adjust the second gain to equal the first gain so that a balance can be automatically achieved between a coverage area of the repeater and a level of noise

associated with the uplink channel and incrementally adjusting the gain (see for example, column 12, lines 20-50, the downlink gain (second gain) is adjusted and being balance by automatically controlling the gain and noise level between a coverage area, and further, column 2, lines 35-67 continued to column 3, lines 1-28, adjusting the gain)

However, Ito does not teach a comparator to compare the power level.

In a related art dealing with repeater transmission in a radio communications system (see for example, column 1, lines 5-12), Grandfield teaches a comparator to compare the power level to a reference power level (see for example, column 2, lines 60-67 continued to column 3, lines 1-24, the comparator (21) and comparing the voltage gain level (power level) to a reference level).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Grandfield's power level comparison into Ito's booster (repeater) noise and gain controller for mobile and base stations (Ito, see for example, column 2, lines 18-45) "to provide multiple high data rate channels that can be controlled without generating interference between each channel, while also optimizing the RF output power" (Grandfield, column 1, lines 38-44).

Regarding claim 17, Ito in view of Grandfield teach all the claimed limitation as recited in claim 16, and Ito further teaches the gain balancer operable to equalize the first and second gains (see for example, column 11, lines 47-50, column 14, lines 9-28, adjusting the uplink gain (second gain) to the downlink gain (first gain)

else imbalance between the uplink and downlink gains disturbs transmission).

Regarding claim 18, Ito in view of Grandfield teach all the claimed limitation as recited in claim 17, and Ito further teaches a first antenna (Figure 1 (180)) and second antenna (Figure 1 (132)), and a first duplexer (Figure 1 (126)) positioned between the first amplifier (Figure 1 (124)) and the first antenna (Figure 1 (180)),and a second duplexer (Figure 1 (128)) positioned between the second amplifier (Figure 1 (116)) and the gain balancer from being transmitted via the first and second antennas (see for example, Figure 1, variable attenuator 110, and 108).

Regarding claim 19, Ito in view of Grandfield teach all the claimed limitation as recited in claim 16, and Ito further teaches the first amplifier (Figure 1(114)), and first attenuator (Figure 1 (108)), and a second amplifier (Figure 1 (116)), and a second attenuator (Figure 1, 110).

Response to Arguments

Note: This office action has been restructured for clarity. Examiner did not change the ground of rejection; but has changed the argument of the rejection for clarity. The references Ito (Ito et al. U. S. Patent 6,690,915) in view of Komara (Komara et al. U. S. Patent 6,339,694), and further in view of Grandfield (Grandfield et al. U. S. Patent 5,802,452) teach the limitations of the claims, and the Examiner shows

(rejection above) that the references are related to the claimed limitations.

3. Applicant's arguments filed October 28, 2004 have been fully considered but they are not persuasive.

The applicant's argued features in the claims, i.e., providing an automatically configuring repeater in a telecommunications network that configures the downlink and uplink gain of the repeater, the repeater receives data from a transceiver via a downlink channel associated with the first gain, and sends data to the transceiver via an uplink channel associated with the second gain, the repeater compares the downlink signal's power level (first gain) to a reference power level, if the downlink power level does not fall within the predetermined range relative to the reference, the repeater comparator adjusts the received downlink signal's power level, and the same gain is applied to the uplink signal power level to control the uplink noise level at the base station to be established read upon Ito (Ito et al. U. S. Patent 6,690,915) in view of Komara (Komara et al. U. S. Patent 6,339,694), and further in view of Grandfield (Grandfield et al. U. S. Patent 5,802,452) as follows.

Ito discloses a booster (repeater) providing gain control in a telecommunication network, configuring the downlink and uplink signal's gain control, receives downlink signal from a base station associated with the downlink signal's gain, measures the received power of the downlink signal,

adjusts the power levels according to a reference power level, the booster controls its gain to reduce the adverse effect of the booster noise on a base station, and measures the noise power of the amplified uplink signal at the booster, It controls the gain of the uplink signal and/or the gain of the downlink signal in response to the transmission power of the received signal. Ito does not specifically teach comparing samples of the received signal, however, Ito teaches adjusting the power levels to a reference power level within the maximum and minimum range. In a related art dealing with repeater transmission gain control in a telecommunications system, Komara teaches sampling the power level, Komara does not specifically disclose comparing the sampled power level, however, Komara teaches that "the sampling and comparison of the signal strength" (power level) "can be performed by a processor such as microprocessor" (column 2, lines 63-65). In a related art dealing with repeater transmission in a radio communications system, Grandfield teaches comparing the voltage gain level (power level) to a reference.

Ito, Komara and Grandfield are analogous to the applicants teaching, that's why they do obviate.

Therefor, Examiner believes the claims are broad enough to include Grandfield's power level comparison with Komara's mobile repeater sampling power level into Ito's booster (repeater) noise and gain controller for mobile and base station. The rejection is maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 703-305-8723. The examiner can normally be reached on 7:00 AM -5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745, the primary examiner, Nick Corsaro can be reached on 703-306-5616. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shaima Q. Aminzay
(Examiner)

March 24, 2005

NICK CORSARO
PRIMARY EXAMINER

Nay Maung
(SPE)
Art Unit 2684